## REMARKS

Claims 1-34 are still pending in this application.

In the Office Action, the Examiner objected to claims 1-7 because the phrase "device adapted to be used with an optical fiber" is not positively recited while most of the dependent claims positively recite the optical fiber and/or its use. Although Applicant disagrees with the Examiner that the phrase should be positively recited in the parent claim, Applicant has moved the phrase from the preamble to the body of claim 1 for the sole reason of accommodating the Examiner's concern.

The Examiner rejected claims 1-34 under 35 U.S.C. Section 102(b) as being anticipated by Mueller (US Patent No. 5725521). Applicant respectfully traverses the rejection.

The present invention as claimed in claim 1 will be explained, by way of example only, with reference to the figures in the present application. As seen in FIG. 12A and 12B, laser treatment of a blood vessel 115, such as laser treatment of varicose veins, involves inserting an optical fiber through the blood vessel until the fiber tip 11 is appropriately positioned, turning on a laser source and then slowly withdrawing the optical fiber (see paragraphs 79-82 of the present specification). The laser energy is emitted at the exposed fiber tip 11 which then heats the blood in the vessel to create gas bubbles. The gas bubbles damage the inner wall of the vessel and ultimately cause the vessel to collapse.

In a conventional treatment device, the fiber tip may have direct contact with the inner vessel wall as shown in FIG. 12B for example. One problem is that it can result in vessel perforation because intense direct laser energy is delivered to the vessel wall rather than indirect thermal energy created as the blood is converted into gas bubbles. Laser energy in direct contact with the vessel wall may cause the vessel to perforate at the contact point and surrounding area. Blood escapes through these perforations into the perivascular tissue, resulting in post-treatment bruising and associated discomfort.

Another problem created by direct contact between the fiber tip and vessel inner wall is that inadequate energy may be delivered to non-contact segments of the diseased vessel. Inadequately heated vessel tissue may not collapse, resulting in incomplete closure of the vessel.

The present invention solves the above problems by incorporating a spacer element 19 such as shown in FIG. 13B to ensure that the spacer positions the fiber tip away from the inner wall of the blood vessel to prevent the tip from contacting the inner wall of the vessel.

Consequently, the spacer avoids the over heating or under heating of the inner vessel wall that occurs when the fiber tip comes in direct contact with the vessel.

Claim 1 has been amended to specifically recite this novel feature as "an optical fiber operable to be inserted into a blood vessel to cause closure of the blood vessel" and "the spacer operable to position the distal end of the optical fiber away from the inner wall of the blood vessel to prevent the distal end of the optical fiber from contacting the inner wall of the blood vessel".

The Examiner states that Mueller discloses a spacer 70 that positions "the distal end of said optical fiber away from the blood vessel as presently claimed". Applicant respectfully disagrees.

Mueller teaches a transmyocardial revascularization (TRM) device for creating channels in the heart muscle using a laser device. In other words, the Mueller device opens channels in the tissue to create a blood flow. By contrast, the present invention of claim 1 is directed to closing blood vessels to prevent blood flow, which is the opposite of Mueller.

In the Mueller device, the fiber tip is positioned outside of a blood vessel. As shown in FIG. 4 of Mueller, laser delivery device 84 is positioned through the endocardium surface 86 and into the myocardium tissue 90 which is not a blood vessel. The spacer provides the precise positioning of laser fiber tip within the myocardium tissue while preventing the tip from piercing into the epicardial surface. By contrast, the present invention of claim 1 requires the spacer to position the fiber tip away from the "**inner wall** of the blood vessel". The spacer of Mueller cannot perform that function because the fiber tip is not even inside the blood vessel.

The spacing function performed by the spacer of Mueller's patent differs from the spacing function performed by the present invention in a significant way. The Mueller spacer prevents advancement of the fiber tip beyond a predetermined distance into the tissue. By contrast, the present spacer element as claimed in claim 1 prevents fiber tip from even contacting the inner vessel wall. In other words, the Mueller spacer intentionally allows piercing of tissue by a predetermined depth while the present invention prevents even inadvertent contact with the inner vessel wall because it may cause vessel perforations and subsequent bruising.

Applicant has amended claim 1 to make this feature clearer by adding ". . . to prevent the distal end of the optical fiber from contacting the inner wall of the blood vessel".

The Examiner rejected claims 1-3, 6, 8, 9, 12 and 17-34 under 35 U.S.C. Section 102(b) as being anticipated by Kittrell (US Patent No. 5693043). Applicant respectfully traverses the rejection.

Kittrell teaches an intravascular laser device for treatment of artherosclerotic disease by removing occlusive material or recanalizing an obstructed lumen. In other words, the Kittrell device, similar to the Mueller device, is also directed to opening an obstructed lumen while the present invention of claim 1 is directed to closing a blood vessel.

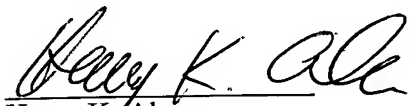
Moreover, the spacer 176 does not position the fiber tip away from the inner wall as claimed in claim 1. The spacer (176 as well as 146 and 166) of Kittrell refers to balloons positioned near the distal end of the treatment device. These balloons are used to rotate the optical fiber so as to move the position and direction of the laser beam to focus on the diseased tissue. However, they do not position the fiber tip away from the inner vessel wall as required by claim 1. None of the cited references, either individually or in combination teach or suggest the novel feature of a spacer that positions the distal end of the optical fiber away from the inner wall of a blood vessel as recited in claim 1.

For the similar reasons as discussed above with respect to claim 1, Applicant submits that independent claims 8, 22, 26, 27 and 31 are patentable.

Applicant also submits that dependent claims 2-7, 9-21, 23-25, 28-30 and 32-34 are patentable by virtue of their dependency from respective independent claims.

Based upon the above amendments and remarks, Applicant respectfully requests reconsideration of this application and its earlier allowance. Should the Examiner feel that a telephone conference with Applicant's attorney would expedite the prosecution of this application, the Examiner is urged to contact him at the number indicated below.

Respectfully submitted,



Harry K. Ahn
Reg. No. 40,243
REED SMITH LLP
599 Lexington Avenue
29th Floor
New York, NY 10022
Telephone No.: 212-521-5433
Attorney for Applicants